

**EMISSION INFORMATION REPORT**  
**in accordance with C.C.R. § 2146 (initial FIR-reference: 2014-Q4)**

**1.0 Manufacturer's Corporate Name**

Daimler, AG ("DAG") and Mercedes-Benz USA, LLC ("MBUSA")

**2.0 Description of the Defect:**

Submission date: 2015-06-16

Amendment: 2015-09-11

2016-01-23

Part designation: Nox Sensor

Part number(s): A 000 905 35 03

DAG has determined three main root causes which may cause the failure of the up-stream and down-stream NOx sensors. 1) Oscillating signal: An increased resistance in the air-reference-electrode of the sensor may lead to increased Nernst voltage which may cause the modulator to oscillate. This situation leads to a permanent deterioration of the sensor signal quality. 2) Crack due to thermic shock: A crack at the ceramic element of the sensor may be caused by residual moisture. When the sensor element is heated too early or overheated, the evaporation of the residual moisture can lead to excessive stress on the strength / load limit of the sensor. 3) Magnesium enrichment: Due to residual moisture in the ceramics, the electrode of the sensor may experience an enrichment of magnesium, which may lead to malfunctions of the sensor. In every case of NOx-sensor malfunction the MIL is illuminated. Additionally the SCR restriction scenario of the vehicle is activated (restriction of the remaining starts and mileage).

**3.0 Description of Each Class of Vehicles Potentially Affected**

Affected Mercedes-Benz products are certain model year 2011, 2012, 2013 and 2014 Mercedes-Benz vehicles ("subject vehicles"). The table below lists the potentially affected vehicle test groups for the subject vehicles.

MY	Engine Family	MB Vehicle Code	Transm. Config.	Model	CA Sales
2011	BMBXT03.0HD 2	L906DE30 (5,0t HD)	L-5	Sprinter 3500 CDI/Freightliner	64
<u>2012</u>	<u>CMBXT03.0HD</u> <u>1</u>	<u>L906DE30 (4,53t HD)</u> <u>L906DE30 (3,88t HD)</u>	<u>L-5</u>	<u>Sprinter 3500</u> <u>CDI/Freightliner</u> <u>Sprinter 2500</u> <u>CDI/Freightliner</u>	<u>1,415</u>
2013	DMBXT03.0HD 1	L906DE30 (3,88t HD) L906DE30 (4,53t HD)	L-5	Sprinter 2500 CDI/Freightliner Sprinter 3500 CDI/Freightliner	1,480
2014	EMBXT03.0HD	L906DE30 (5,0t HD)	L-5	Sprinter 3500	193

	2			CDI/Freightliner	
				<b>Total</b>	<b><u>3,152</u></b>

#### **4.1 Number of Vehicles Estimated to be Potentially Affected**

The total number of potentially affected vehicles is 3,152. DAG estimates that all potentially affected MY11 (BMBXT03.0HD2) vehicles will experience this situation in the field within FUL. Regarding MY13 (DMBXT03.0HD1) DAG estimates that approximately 4% of potentially affected vehicles will experience the defect within FUL. Regarding MY14 (EMBXT03.0HD2) about 73% of potentially affected vehicles are expected to experience the situation in the field. Regarding MY12 (CMBXT03.0HD1) about 11.6%% of potentially affected vehicles are expected to experience the situation in the field. Please note that the potential claims and estimations apply to both NOx sensors – downstream and upstream.

#### **4.2 Address of Plants at Which Potentially Affected Vehicles Were Produced**

Mercedes-Benz, Ludwigsfelde, Germany  
Mercedes-Benz, Duesseldorf, Germany

#### **5.0 Emission and Drivability Impact of Affected Vehicles**

Drivability is not affected.

There is no impact on emissions resulting from malfunction of the up-stream NOx-sensor - in the event of complete sensor failure, the dosing of the SCR automatically switches from a NOx sensor value to a value based on the NOx exhaust-gas emission level measured before the catalytic converter. The injected AdBlue amount is therefore always calculated based on a modeled value. Thus, the NOx emissions will always be within the normal series test variation, even when the back-up model values are used to calculate the SCR dosing rate. There is also no impact on emissions resulting from malfunction of the down-stream NOx-sensor. The dosing of the AdBlue fluid is defined exclusively by the measurement values of the up-stream NOx sensor located in front of the SCR catalytic converter. The downstream NOx sensor itself is used for the monitoring of the efficiency of the SCR catalytic converter.

#### **6.0 Emission Data**

DAG has conducted monitoring system demonstration emission testing (Dodge Sprinter Bluetec II MY2010 vehicle.

	NMHC [g/mi]	CO [g/mi]	NOx [g/mi]	PM [g/mi]
Test Threshold: Measured Emissions + AAF According to Monitoring System Demonstration (CCR 1968.2, Subsection (i)(2.4))	0,3438	15,75	0,5	0,15
Reference Test	0,013	0,134	0,158	0,0032
Exhaust Gas Sensors NOx sensor (upstream) – response rate	0,008	0,137	0,167	0,001
Exhaust Gas Sensors NOx sensor (upstream) – amplitude offset	0,004	0,132	0,174	0,002
Exhaust Gas Sensors NOx sensor (upstream) – amplitude plausability	0,005	0,116	0,170	n/a
Exhaust Gas Sensors NOx sensor (upstream) – dynamic	0,004	0,149	0,145	0,003
Exhaust Gas Sensors NOx sensor (downstream) – response rate	0,006	0,156	0,178	0,003
Exhaust Gas Sensors NOx sensor (downstream) – amplitude offset	0,003	0,132	0,160	0,002
Exhaust Gas Sensors NOx sensor (downstream) – dynamic	0,005	0,135	0,165	0,003